



## Original communication

## Suicidal childhood deaths with firearms in Antalya, Turkey

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## ABSTRACT

The purpose of this study was to determine the characteristics of suicidal childhood deaths with the use of firearms that occurred from 2000 to 2009 in Antalya.

The autopsy reports of the Antalya branch of the Turkish Forensic Medicine Council and judicial records were reviewed retrospectively. There were 60 suicidal deaths between 0 and 18 years of age. Firearms were used in 20 cases (11 males, 9 females). The shotgun ( $n = 15$ ) was the most frequently used weapon. The site of bullet entries were the chest ( $n = 6$ ), abdomen ( $n = 5$ ), right temple ( $n = 5$ ), mouth ( $n = 2$ ) and neck ( $n = 2$ ). Most suicides ( $n = 16$ ) were in the home.

In contrast to many other studies, the most frequently used weapon for suicides was the shotgun in this study.

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## 1. Introduction

Suicide is a manner of death that is often difficult for the public to accept, especially in pediatric cases.<sup>1</sup> That a child or adolescent would find himself or herself in a situation where the only perceived option is to take their own life is tragic but not uncommon.<sup>2</sup> Suicidal deaths with firearms account for a high rate of all suicidal deaths and of all firearm deaths and they are one of the most lethal types of suicides.<sup>3</sup> Studies have demonstrated that only the rate of suicide by firearms has risen continuously over the past 4 decades.<sup>4</sup>

The World Health Organisation (WHO) report suicide rates of 0.4 and 1.5 per 100,000 population for 5–14-year-old females and males.<sup>5</sup> In a review of child and adolescent suicide, Pelkonen and Marttunen (2003) cited international suicide rates for adolescents 15–19 years reported by WHO. Rates were presented by sex, for a 2-year average. These varied substantially for males (0.2–34.5 per 100,000) and females (0.0–17.1 per 100,000).<sup>5–7</sup>

However, there are numerous studies in the literature, mostly focusing on suicidal deaths in childhood periods for all used methods or suicidal firearm deaths for all age groups. The purpose of this study was to determine the characteristics of suicidal childhood deaths with the use of firearms that occurred from 2000 to 2009 in Antalya and emphasize the suicidal firearm deaths in childhood period.

## 2. Methods

This is a retrospective review of suicidal firearm deaths of children between 0 and 18 years old, whose autopsies were performed in the Morgue Department of the Antalya branch of the Turkish Forensic Medicine Council between 2000 and 2009.

The autopsy reports and the judicial records were examined with regard to gender, type of used firearms, site of entrance wound, range of fire, toxicological analyses, scene of suicide and the presence of suicide note.

## 3. Results

A total of 3200 medicolegal autopsies were performed during the 10 year period from 2000 to 2009 in Antalya. Sixty (1.9%) deaths were determined as suicides below 18 years of age. Of these, 20 (33.3%) cases were suicide by firearms, 15 (25%) cases were suicide by hanging and 15 (25%) cases were suicide by intoxication. Distribution of suicide methods is shown in Fig. 1.

Of 20 suicidal childhood deaths with the use of firearms, 11 (55%) cases were male and 9 (45%) were female. One of them was 13 year old and the others were 14 and older.

The shotgun ( $n = 15$ , 75%) was the most frequently used firearm (Table 1).

There was a single entrance wound in all cases. Distribution of sites of the entrance wounds according to gender is shown in Table 2.

All entrance wounds formed by handgun bullets located in the right temporal region. There were no cases of close or distant range of fire.

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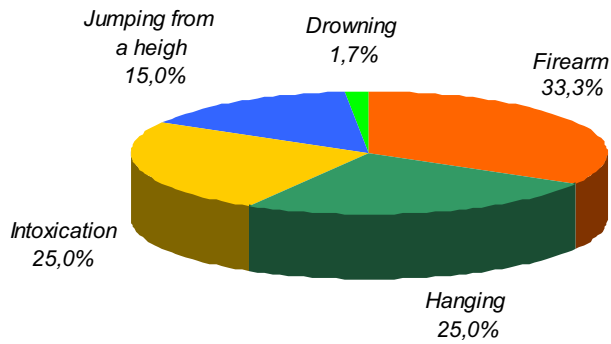


Fig. 1. Suicide methods.

The results of toxicological analyses performed at autopsy showed low levels of ethyl alcohol (1–100 mg/dl) in 6 suicides. Benzodiazepin (5860 ng/ml) and cannabinoid metabolites (78 ng/ml) were detected in one case and codein, chlorphenamine and ibuprofen were detected at therapeutic levels in another case.

The most frequent suicide scene was home ( $n = 16$ , 80%). Four suicides were committed in other locations. These locations are: workplace, pathway, mountain area and vineyard house.

None of them had a history of neurological or psychiatric disorders. A suicide note was found in two cases.

#### 4. Discussion

Methods of suicide used by children and adolescents vary with respect to gender and socio-cultural factors. A study conducted in Canada determined that the most common method was hanging (48.4%), followed by firearms (13%), whilst in Hungary the most common method was jumping from heights (36.1%), followed by hanging.<sup>2,8</sup> Studies conducted on suicides in the United States showed that the most common causes were firearm injuries.<sup>1,9</sup> In certain autopsy studies conducted in Turkey, hanging was found to be the most common method, with 34.4% in Adana, 52.9% and 55% in Istanbul.<sup>10–12</sup> However other studies reported that firearm injury was the leading cause of death with 43% in Diyarbakır and 51.2% in Istanbul.<sup>13,14</sup> According to data on suicides in 2010 from the Turkish Statistical Institute, the most frequently used method was hanging (49.1%), followed by firearms (27%) in children aged less than 19 years.<sup>15</sup> Unlike this data, we found that in 33.3% of our cases firearms were used for suicide, followed by hanging and intoxication.

The most common type of firearm used in suicide attempts is handgun, while suicides with long-barreled firearms are uncommon.<sup>16–18</sup> In contrast to these, in our study shotgun was the most commonly used firearm. Shotguns are easily obtainable firearms and are traditionally hung on nails on the walls of houses in Turkey. Thus, they are attractive objects for those who aim to commit suicide.<sup>13,19</sup>

With regard to entrance wound distribution in suicides, the typical area is right temple of the head that is strictly related to the use of a handgun.<sup>18–23</sup> The most common entrance wound site was the chest in this study. This may be explained by the fact that shotgun was the most frequently used firearm. In all cases of injury to the right temple a handgun was used in our study.

Table 1  
Types of used firearms and gender.

| Types of firearms | Male    | Female | Total%   |
|-------------------|---------|--------|----------|
| Shotgun           | 9       | 6      | 15 (75)  |
| Handgun           | 2       | 3      | 5 (25)   |
| Total             | 11 (55) | 9 (45) | 20 (100) |

Table 2  
Entrance wound sites and gender.

| Entrance wound sites | Male    | Female | Total%   |
|----------------------|---------|--------|----------|
| Chest                | 3       | 3      | 6 (30)   |
| Abdomen              | 2       | 3      | 5 (25)   |
| Right temple         | 2       | 3      | 5 (25)   |
| Mouth                | 2       | —      | 2 (10)   |
| Neck                 | 2       | —      | 2 (10)   |
| Total                | 11 (55) | 9 (45) | 20 (100) |

In several studies, ethyl-alcohol was detected in 57% and 52% of the suicides using firearms.<sup>24,25</sup> In other study conducted in Istanbul and covering all age groups, alcohol was found in only 17.8% of suicidal deaths using shotgun.<sup>26</sup> However, in our study, approximately one-third of the cases committed suicide with the use of firearms under the influence of alcohol.

In this study, the most frequent suicide scene was home, compatible with the literature.<sup>1,12–14</sup> A common belief is that most suicide victims leave some type of final note.<sup>1</sup> The presence of a suicide note is quite variable in the literature, ranging from 4% to 39% of cases.<sup>1,2,13,14</sup> In our study, a suicide note was found in only two cases.

In contrast to many other studies, the most frequently used weapon for suicides was the shotgun in this study. This may be related to the socio-cultural characteristics of the populations studied. In addition, availability is a factor in determining methods of suicide chosen by children and adolescents.<sup>2,27</sup> Therefore, restriction of easy access to firearms is certainly an important preventive measure.

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**Conflict of interest**

We certify that there is no actual or potential conflict of interest in relation to this article.

#### References

- Lee CJ, Collins KA, Burgess SE. Suicide under the age of eighteen: a 10-year retrospective study. *Am J Forensic Med Pathol* 1999;**20**:27–30.
- Shaw D, Fernandes J, Rao C. Suicide in children and adolescents: a 10-year retrospective review. *Am J Forensic Med Pathol* 2005;**26**:309–15.
- Shenassa ED, Catlin SN, Buka SL. Lethality of firearms relative to other suicide methods: a population based study. *J Epidemiol Community Health* 2003;**57**:120–4.
- Boyd JH. The increasing rate of suicide by firearms. *N Engl J Med* 1983;**308**:872–4.
- WHO Statistical Information System. WHO. Available at: [http://www.who.int/mental\\_health/prevention/suicide/suicide\\_rates\\_chart/en/index.html](http://www.who.int/mental_health/prevention/suicide/suicide_rates_chart/en/index.html); 2000 [online] [accessed 12.11.12].
- Windfuhr K, While D, Hunt I, Turnbull P, Lowe R, Burns J, et al. Suicide in juveniles and adolescents in the United Kingdom. *J Child Psychol Psychiatry* 2008;**49**(11):1155–65.
- Pelkonen M, Marttunen M. Child and adolescent suicide: epidemiology, risk factors and approaches to prevention. *Paediatr Drugs* 2003;**5**:243–65.
- Töero K, Nagy A, Sawaguchi T, Sawaguchi A, Sótönyi P. Characteristics of suicide among children and adolescents in Budapest. *Pediatr Int* 2001;**43**(4):368–71.
- Bennett AT, Collins KA. Suicide: a ten-year retrospective study. *J Forensic Sci* 2000;**45**(6):1256–8.
- Arsilan M, Akçan R, Hilal A, Batuk H, Çekin N. Suicide among children and adolescents: data from Cukurova, Turkey. *Child Psychiatry Hum Dev* 2007;**38**(4):271–7.
- Pakis I, Yayci N, Karapirli M, Yildiz N, Gunce E, Yilmaz R, et al. Childhood deaths due to suicide. *Aust J Forensic Sci* 2010;**42**(3):191–7.
- Uzun I, Karayel FA, Akyildiz EU, Turan AA, Toprak S, Arpak BB. Suicide among children and adolescents in a province of Turkey. *J Forensic Sci* 2009;**54**(5):1097–100.

13. Goren S, Gurkan F, Tirasci Y, Ozen S. Suicide in children and adolescent at a province in Turkey. *Am J Forensic Med Pathol* 2003;**24**(2):214–7.
14. Agritmis H, Yaycı N, Colak B, Aksoy E. Suicidal deaths in childhood and adolescence. *Forensic Sci Int* 2004;**142**(1):25–31.
15. *Suicide statistics*. Turkish Statistical Institute (TUIK). Available at: [http://www.tuik.gov.tr/IcerikGetir.do?istab\\_id=23](http://www.tuik.gov.tr/IcerikGetir.do?istab_id=23); 2010 [accessed 19.03.12].
16. Wiebe DJ. Homicide and suicide risks associated with firearms in the home: a national case-control study. *Ann Emerg Med* 2003;**41**:771–82.
17. Cetin G, Yorulmaz C. Firearm injury. In: Soysal Z, Cakalir C, editors. *Forensic medicine* vol. 2. Istanbul: Istanbul University Press and Film Center; 1999. p. 561–86.
18. Canturk G, Canturk N, Odabasi AB, Erkol Z, Bosgelmez M. Autopsy findings of suicidal deaths committed by firearms in Ankara, Turkey. *Med Sci Law* 2009;**49**(3):207–12.
19. Goren S, Subasi M, Tirasci Y, Kemaloglu S. Firearm-related mortality: a review of four hundred-forty four deaths in Diyarbakir, Turkey between 1996 and 2001. *Tohoku J Exp Med* 2003;**201**:139–45.
20. Cina SJ, Ward ME, Hopkins MA, Nichols CA. Multifactorial analysis of firearm wounds to the head with attention to anatomic location. *Am J Forensic Med Pathol* 1999;**20**:109–15.
21. Eisele JW, Reay DT, Cook A. Sites of suicidal gunshot wounds. *J Forensic Sci* 1981;**26**:480–5.
22. Di Maio VJM. *Gunshot wounds*. 2<sup>th</sup> ed. CRC Press LLC; 1999:203–51.
23. Solarino B, Nicoletti EM, Di Vella G. Fatal firearm wounds: a retrospective study in Bari (Italy) between 1988 and 2003. *Forensic Sci Int* 2007;**2**–**3**:95–101.
24. Avis SP. Suicidal gunshot wounds. *Forensic Sci Int* 1994;**67**:41–7.
25. Koops E, Flus K, Lockemann U, Püschel K. Tödliche Schußverletzungen in Hamburg 1966–1991. *Arch Kriminol* 1994;**193**:14–22.
26. Aşirdizer M, Cantürk G, Cantürk N, Yavuz MS, Sari H. Analyses of suicidal deaths with shotguns in Istanbul, 1998–2007. *Ulus Travma Acil Cerrahi Derg* 2010;**16**(1):47–53.
27. Byard RW, Haas E, Marshall DT, Gilbert JD, Krous HF. Characteristic features of pediatric firearm fatalities—comparisons between Australia and the United States. *J Forensic Sci* 2009;**54**(5):1093–6.